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Certain parallel developments in Pāli and New Persian phonology.—By LOUIS H. GRAY, Columbia University, New York, N. Y.

It is a well-known fact in linguistics that languages which are entirely without influence one on the other often show a striking similarity in their development. The Indo-Iranian group is especially instructive in this regard, for its time limit extends from the period of Indo-Iranian unity to the present day, while its geographical area stretches from the Sinhalese in the south to the Māzandarānī in the north, and from the Kurdish in the west to the Bangali in the east. Between the Indian and the Iranian divisions of the Aryan dialects a development may be traced which is frequently closely parallel. It is my purpose in the near future to discuss the broader question of these cases of similarity in some detail. Here I can touch only upon certain points of resemblance in the phonology of the Pāli as compared with that of the New Persian, which forms my special subject of investigation for the present.

Although these two languages are spoken in territories which are separated so widely, they nevertheless occupy almost identical relations to the Indo-Iranian parent speech. The abrupt change between the Sanskrit and the Pāli-Prākṛit in the Indian branch, as compared with the transition grade of the Pahlavi in Iranian, is due in great part to the long preservation of the Sanskrit as a learned language. That close attention to the preservation of the written language which is so marked in India never existed in Iran. So it is that we find in Persia the successive changes in language recorded for us in the literature, while in India the Pāli-Prākṛit appear at once as finished languages. All coincidences between the Pāli and the New Persian which I am about to note¹ are due solely to the operation in both dialects of the laws of development which govern the Indo-Iranian languages in general. I do not mean to imply for an instant any idea of a

¹ I pass over unnoticed those phenomena of the Pāli which do not exist at all in New Persian, such as a discussion of the Indian cerebrals or a consideration of the laws of *sandhi*.

mutual influence of the Pāli and the New Persian. With these words by way of introduction, I now proceed to state as briefly as possible the main points of similarity between the Pāli and the New Persian so far as their phonology is concerned.

A. Vowels.

Indo-Iranian *a*.—Indo-Iranian *a* is in general retained unchanged both in Pāli and in New Persian. Skt. *bharati* 'he bears,' Pāli *bharati*, New Pers. *barad*.

Indo-Iranian *a* becomes *i*. Skt. *tamasa* 'darkness,' Pāli *timisa* (cf. Avestan *tamah*); Av. *ātarš* 'fire,' New Pers. *ātaš*, *ātiš*.

Indo-Iranian *a* becomes *u* (especially in the neighborhood of labials). Skt. *pañcaviṣaṭi* 'twenty-five,' Pāli *pañṇuvisati*; Av. *vazra* 'mace,' New Pers. *gurz*.

Indo-Iranian *ā*.—Indo-Iranian *ā* is in general retained. Skt. *dhārayati* 'he holds,' Pāli *dhāreti*, New Pers. *dāšt*.

Indo-Iranian *ā* becomes *e*. Skt. *mātṛka* 'maternal,' Pāli *metti-ka*; cf. New Pers. *tīv* (older form *tēv*)¹ beside *tāv*.

Indo-Iranian *ā* becomes *o*. Skt. *dhāvati* 'he washes,' Pāli *dhovati*; Av. *pāiti* 'he protects,' New Pers. *pūyīdan* 'to run,' (older form *pōyīdan*) beside *pāyīdan*.

Indo-Iranian *ā* becomes *ū* (only in cases of analogy, following forms whose *ū* is regular. See Hübschmann, *Persische Studien*, 135–136, Torp, *Flexion des Pāli*, 35). Skt. *viñña* 'wise,' Pāli *viññū* (root *jñā*); Old Pers. *āmāta* 'tested,' New Pers. *āmūdan*.

Indo-Iranian *i*.—Indo-Iranian *i* is in general retained. Skt. *iva* 'as,' Pāli *iva*; Old Pers. *pitar* 'father,' New Pers. *pidar*.

Indo-Iranian *i* becomes *a*. Skt. *pṛthivī* 'earth,' Pāli *paṭhavī*; Skt. *hima* 'winter,' New Pers. *zam*.

Indo-Iranian *i* becomes *u* (in New Pers. chiefly in the vicinity of labials). Skt. *rājila* 'lizard,' Pāli *rājula*; Av. *spiš* 'louse,' New Pers. *supuš*, *šupuš*, *špuš*.

¹ The archaic pronunciation as well as that now current in India is *tēv*. Following the modern pronunciation, I have everywhere written *ī* and *ū* even for *ē* and *ō* corresponding to Old Persian *ai*, *au*, Av. *aē*, *ao*, Pahl. *ē*, *ō*. Had I been dealing with the New Persian development only, I should have written now *ē*, now *ō*, according to the etymology. In dialectic words I have not ventured to depart from Horn's transcription. Cf. further, Spiegel, *KB*. iii. 77–81; Darmesteter, *Études Iraniennes*, i. 104–110; Horn, *Grundriss der iran. Philol.*, i. b. 82–83; and Hübschmann, *KZ*. xxxvi. 153–163.

Indo-Iranian *ī*.—Indo-Iranian *ī* is in general retained. Skt. *jīvita* 'life,' Pāli *jīvita*; Skt. *kṣīra* 'milk,' New Pers. *šīr* (older form also *šīr*).

Indo-Iranian *u*.—Indo-Iranian *u* is in general retained. Skt. *bhuñjati* 'he eats,' Pāli *bhuñjati*; Av. *uštra* 'camel,' New Pers. *uštūr*.

Indo-Iranian *u* becomes *a*. Skt. *sphurati* 'he flashes,' Pāli *pharati*; Av. *yuvan* 'young man,' New Pers. *juvān* beside *javān*.

Indo-Iranian *u* becomes *i*. Skt. *duṇḍubhi* 'drum,' Pāli *din-dima*; Old Pers. *puš'a* 'son,' New Pers. *pisar* beside *pusar*.

Indo-Iranian *u* becomes *o* (in Pāli especially before double consonants). Skt. *ulkā* 'torch,' Pāli *okkā*; Av. *uši* 'understanding,' New Pers. *hūš* (older form *hōš*, cf. Pahl. *hōš*).

Indo-Iranian *ū*.—Indo-Iranian *ū* is in general retained. Skt. *bhūmi* 'earth,' Pāli *bhāmi*, New Pers. *būm* (older form also *būm*).

Indo-Iranian *ū* becomes *ī*. Skt. *bhūyas* 'more,' Pāli *bhīya*, *bhiyya*; cf. Av. *raoša* 'face,' New Pers. *rī* beside *rūi* (the *ī* in this latter is a dialectic peculiarity, and it has come through the transition grade of *ū*. The older form of the common New Pers. *rūi* is *rōi*; cf. Pahl. *rōd*, and see Horn, *KZ.* xxxv. 178–179; Hübschmann, *KZ.* xxxvi. 155).

Indo-Iranian *r*.—Indo-Iranian *r*, which is represented in Avestan by *ar* and in Old Persian by *ar* (Bartholomae, *Grundriss der iran. Philol.*, i. 168–169; Horn, *ibid.* i. b. 26) has been changed in Pāli and New Persian¹ into *a*, *i*, *u*, *e*, or into *r* accompanied by *a*, *i*, *u*. The quality of the vowel in the change here considered is in general determined by the character of the consonants which stand near the original *r*. The normal sound arising from an original *r* is *a*, but labials color the vowel to *u(r)*, and sibilants color it to *i(r)*.

Indo-Iranian *r* becomes *a*. Skt. *gr̥ha* 'house,' Pāli *gaha*; Skt. *pṛ̥daku* 'leopard,' New Pers. *palang*; Skt. *dr̥ṇīyāt* 'he should rend,' New Pers. *darram* 'I rend' (Hübschmann, *KZ.* xxxvi. 174).

Indo-Iranian *r* becomes *i*. Skt. *mṛ̥ga* 'deer,' Pāli *miga*; Skt. *hṛ̥d* 'heart,' New Pers. *dīl*.

¹ See now Hübschmann, "Vocalisches *r* im Persischen," *KZ.* xxxvi. 165–175. Here it is shown that New Pers. *ar* is to be derived from Indo-Iranian *ar*, while New Pers. *ir*, *ur* arise from Indo-Iranian *r*.

Indo-Iranian *r* becomes *u*. Skt. *vr̥ṣṭi* 'rain,' Pāli *vuṭṭhi*; Skt. *pr̥sthā* 'back,' Av. *par̥šti*, New Pers. *pušt*. Note also New Pers. *kunād* 'he makes' and Old Pers. *akutā*, *akunauš*, as compared with Skt. *kṛṇōti*, *kṛta*, *akṛṇōt* (similarly also Skt. *ṣṛṇōti* 'he hears,' New Pers. *šunad*).

Indo-Iranian *r* becomes *e*. Skt. *gr̥ha* 'house,' Pāli *geha* (this form has found its way also into the Sanskrit (Wackernagel, *Altind. Gramm.*, i. 39-40); Av. *var̥ša* 'forest,' New Pers. *bīšah* (Horn, 35).

Indo-Iranian *r* becomes *ar*. Skt. *gr̥ha* 'house,' Pāli *ghara* (Kuhn, *Beiträge zur Pāli-Grammatik*, 15-16); Av. *ap̥rənāyu* 'boy,' New Pers. *barnā* beside *burnā* (the latter form is etymologically the correct one; cf. Hübschmann, *KZ.* xxxvi. 174).

Indo-Iranian *r* becomes *ir*. Skt. *ṛtvij* 'brahmanical priest,' Pāli *iritvija*; Skt. *kṛmi* 'worm,' New Pers. *kirm*.

Indo-Iranian *r* becomes *ur*. Skt. *vṛk̥ṣa* 'tree,' Pāli *ruk̥kha*; Av. *bar̥za* 'high,' New Pers. *burz*.

It is further to be noted that the vowel *r* may develop into different vowels in the same word. Skt. *mṛga* 'deer,' Pāli *maga* and *miga*; Skt. *vṛddhi* 'increase,' Pāli *vuddhi* and *vaddhi*; Av. *ap̥rənāyu* 'boy,' New Pers. *barnā* and *burnā*; Skt. *pṛdaku* 'leopard,' New Pers. *palang* and *pīlang* (Horn, 21).

Indo-Iranian *ē*.—Indo-Iranian *ē* (Indo-Germanic *ai*, *ei*, *oi*, [*āi*,] *oi*) is in general retained unchanged. Skt. *deva* 'god,' Pāli *deva*, Av. *daēva* 'demon,' New Pers. *dīv* (older form *dēv*).

Indo-Iranian *ē* becomes *i* (particularly before double consonants). Skt. *prativeçaka* 'neighboring,' Pāli *paṭivissaka*; Av. *pairidaēza* *παράδεισος*, New Pers. *diz* or *diž* beside *dīz* (older form *dēz*, in Pahlavi *dezō* is also found).

Indo-Iranian *ō*.—Indo-Iranian *ō* (Indo-Germanic *au*, *eu*, *ou*, [*āu*,] *ou*) is in general retained unchanged. Skt. *bhojana* 'food,' Pāli *bhojana*; Old Pers. *dauštar* 'friend,' New Pers. *dūšt* (older form, as in Pahlavi, *dōšt*).

Indo-Iranian *ō* becomes *u* (particularly before double consonants). Skt. *jyotsna* 'moon-lit night,' Pāli *juṃha*; Old Pers. *kaufa* 'hill,' New Pers. *kuh* beside *kūh* (older form *kōh*, cf. Pahlavi *kōf*).

No close parallel between the Pāli and the New Persian can be shown as regards the treatment of *ē* and *ō*. The Pāli *e* and *o* are pronounced short before two consonants (Frankfurter, *Handbook of Pāli*, 2), and they thus become capable of interchange with

other vowels. This is not the case in New Persian. In like manner the change in Pāli of the long diphthongs to the short ones is not paralleled in New Persian. In the Iranian we find the long diphthongs *āi* and *āu* preserved without change in the few instances in which they occur. As examples of the treatment of the long diphthongs in the Pāli and New Persian we may cite the following words: Skt. *āikāgārika* 'thief,' Pāli *ekāgārika*; Skt. *Gāutama* nom. prop., Pāli *Gotama*: Skt., Av. *rāi* 'radiance,' New Pers. *rāy* (archaic); Skt. *nāu* 'boat,' New Pers. *nāv* (cf. Horn, 38-39).

Besides these cases we find many sporadic changes in quantity for which no fixed rule can be laid down.

ā becomes *a*. Skt. *prajñāvant* 'wise,' Pāli *paññavā*; Av. *kahr-kāsa* 'vulture,' New Pers. *kargas*.

ī becomes *i*. Skt. *alika* 'false,' Pāli *alika*; New Pers. *āyīnah* 'mirror' beside *āyīnah*.

ū becomes *u*. Skt. *gālūka* 'root of the water-lily,' Pāli *sāluka* beside *sālūka*; Skt. *tūrya* 'musical instrument,' Pāli *turiya*; Av. *gūša* 'excrement,' New Pers. *guh* beside *gūh* (older form also *gūh*, cf. Pahlavi *guh* and *gūh*).

a becomes *ā*. Skt. *pratyamitra* 'enemy,' Pāli *paccāmitta*; Skt. *nakha* 'nail,' New Pers. *nāxun*.

i becomes *ī* and *u* becomes *ū* (not in New Persian?). Skt. *Āupacivi* nom. prop., Pāli *Upasīva*; Skt. *nirupakāra* 'useless,' Pāli *nirūpakāra* (cf. Childers *sub voc.* Possibly a popular confusion with *rūpa* 'form' may also have been a factor in changing the *u* of this word to *ū*).

Change of quantity.—In Pāli an original long vowel before an original double consonant is shortened, or else the long vowel may be retained if the double consonant be simplified. Yet again, an original short vowel may receive compensatory lengthening if an original double consonant following be simplified, or an original single consonant may be doubled with a consequent shortening of an original long vowel preceding (Kuhn, 17-21). The first and third of these phenomena are common to Pāli and to New Persian.

An original long vowel is shortened before an original double consonant. Skt. *rāṣṭra* 'kingdom,' Pāli *raṭṭha*; Old Pers. *Bāxtri* nom. prop., New Pers. *Balx*; Pahl. *zīvandak* 'living,' New Pers. *zindah*.

An original short vowel receives compensatory lengthening if an original double consonant following be simplified. Skt. *kar-*

tum 'to do,' Pāli *kātum* beside *kattum*; Old Pers. *puṣra* 'son,' New Pers. *pūr* (older form also *pūr*); Av. *hučiṣra* 'beautiful,' New Pers. *hužir*, *hujir*, *xujir* (older forms the same).

Nasalized Vowels.—An original nasalized vowel is occasionally replaced both in Pāli and in New Persian by a long vowel. (May we compare *ā* beside *ā̃* in Avestan, e. g., *dāmi* 'creature' beside *dāmi*, *nāman* 'name' beside *nāman*? See Jackson, *Avest. Gramm.*, 13; Bartholomae, 172.) Skt. *siṃha* 'lion,' Pāli *siha*; New Pers. *sā* 'manner' beside *sān* (in New Pers., however, this phenomenon occurs only after long vowels).

The reverse process, the development of an inorganic anusvāra from a mute, is fairly common in Pāli. Skt. *mahiṣa* 'buffalo,' Pāli *mahiṃsa*. Here it is not the New Persian but the Kurdish which offers us a parallel for this phenomenon. Kurd. *qāntir* 'donkey' beside *kātir* (from the Turkish *qaṭir*; Socin, *Grundriss der iran. Philol.*, i. b. 258).

Aphaeresis and Syncope.—Aphaeresis occurs sporadically in Pāli. Skt. *alaṅkāra* 'adornment,' Pāli *laṅkāra*; Skt. *idānīm* 'now,' Pāli *dāni*; Skt. *udaka* 'water,' Pāli *daka* (this Middle Indian form has crept into Sanskrit also, Wackernagel, *Altind. Gramm.*, i. 60). Kuhn, 35, explains the majority of these sporadic cases of aphaeresis in Pāli as being due to the operation of sandhi. In this he is, I think, entirely correct. In New Persian it is a law that initial *a* before a single consonant vanishes (Horn, 20), e. g. Av. *apərənāyu* 'boy,' New Pers. *burnā*; Pahl. *apē* 'without,' New Pers. *bī* beside the older form *abī* (*abē*). So also initial *u* vanishes (through the transition grade of *a*? See Hübschmann, *Pers. Stud.*, 138–139; and cf. Skt. *upasthāna* 'honor,' Pahl. *apastān*), e. g., Old Pers. *upariy* 'above,' New Pers. *bar* beside *abar*.

Syncope occurs in both languages. Skt. *duhitā* 'daughter,' Pāli *dhūtā*; Skt. *agāra* 'house,' Pāli *agga* from **agra*; Av. *yazatanām* 'of the Angels,' New Pers. *yazdān* 'God'; Av. *paṣana* 'broad,' New Pers. *pahn*. We may perhaps also refer to this category the loss of a final vowel of a word which becomes the first member of a compound, e. g., Skt. *aṣvātara* 'mule,' New Pers. *astar*; Av. *zairigaona* 'having a golden color,' New Pers. *zaryūn*; Av. *daiuṇhu-paiti* 'lord of the land,' New Pers. *dihgān* 'village chief' (cf. the Armen. loan-word *dehpet*).

Prothesis, Epenthesis, and Anaptyxis.—Prothesis is excessively rare in Pāli. The only case seems to be Skt. *strī*

‘woman,’ Pāli *itthī* (cf. *itthī* in the Aṣoka inscriptions, Senart, *Inscriptions de Piyaḍasi*, ii. 330). Pischel, *Ved. Stud.*, i. 17, compares for a similar instance of prothesis Skt. *iskṛta* ‘arranged’ from the root (s)*kar*. On the other hand Bartholomae, *Stud. zur indog. Sprachgeschichte*, i. 122–123, denies absolutely the existence of any prothetic vowel in Sanskrit. (Cf. also Uhlenbeck, *Etymol. Wörterbuch der altind. Sprache*, 26.) Prothesis is quite common in New Pers., since no word in this language may begin with a consonant group. The quality of the prothetic vowel is generally determined by the consonants originally beginning the word. Skt. *brū* ‘brow,’ New Pers. *abrū*; Av. *spaēta* ‘white,’ New Pers. *ispūd* (older form *ispēd*); Av. *stūna* ‘column,’ New Pers. *ustūn* (older form also *ustūn*, cf. Pahlavi *stūn*); Av. *Sraoša* nom. prop., New Pers. *Sarūš* (older form *Sarōš*, cf. Pahlavi *Srōš*); Old Pers. *brātar* ‘brother,’ New Pers. *birādar*; Skt. *kroṣa* ‘cry,’ New Pers. *xurūš* ‘cock’ (older form *xurōš*).

Epenthesis, which is not unknown in New Persian (Horn, 28–29, 34, 37), does not seem to occur in Pāli.

Anaptyxis is rare in Pāli and is found only in late texts. Pāli *ṭhahati* ‘he stands’ beside *ṭhāti* (Kuhn, 35). In New Persian on the contrary it is rather frequent. Av. *āfrīna* ‘blessing,’ New Pers. *āfarīn* (older form also *āfarīn*); Av. *uštra* ‘camel,’ New Pers. *uštūr*.

We find a long anaptyctic vowel in the poetic *pādāhfarāh* ‘recompense’ beside *pādahfarāh*; cf. Av. *maṭ-paitifrasa*. (Compare also the long anaptyctic vowels *ē* and *ō* sometimes found in Avestan; Jackson, *Avest. Gramm.*, 27.) An irregular anaptyxis is found in the New Persian *pādišāh* ‘king’ beside *pādšāh* (Horn, 41).

B. Consonants.

Gutturals.—The Indo-Germanic gutturals are retained in general unchanged. But a Sanskrit guttural may become a palatal in Pāli, e. g., Skt. *kunda* ‘turner,’ Pāli *cunda*. A similar variation is sometimes found in the Avestan as compared with the Sanskrit (Jackson, *Avest. Gramm.*, 28; Bartholomae, 10; cf. Wackernagel, *Altind. Gramm.*, i. 140). A like interchange of palatals and gutturals is also seen occasionally in Kurdish as compared with the New Persian, e. g., New Pers. *kīk* ‘flea’ (properly written *kaik*), Kurd. *kēč*, *keč* (Socin, *Grundriss der iran. Philol.*, i. b. 264).

Palatals.—A Sanskrit palatal becomes a guttural in a few words. Skt. *bhiṣaj* ‘physician,’ Pāli *bhisakka* (for Avestan parallels see Jackson and Bartholomae, *loc. cit.*). Skt. *j* sometimes becomes Pāli *ḍ*. Skt. *jighatsā* ‘hunger,’ Pāli *ḍigacchā* beside *jighacchā*. Kuhn, 36, assumes the following development: *j* was pronounced *gy*, which became *dy*, which became *dž*, which became *ḍ*; the change of *c* to *t* was analogous. With this we may compare the Prākṛit *ḥj* from *dy*. Skt. *pratipadiṣyati* ‘he will approach,’ Prāk. *paṭivajjissadi* (Lassen *Institutiones linguae praepraeiticae*, 206–207). Sanskrit *c* becomes Pāli *t*. Skt. *cikitsā* ‘medicine,’ Pāli *tikicchā* (cf. Skt. *tiṣṭhati* ‘he stands,’ Prāk. *ciṭṭhadi* beside *tiṭṭhadi*, Lassen, 197). Noteworthy in this connection is the Avestan *taṭ-āpəm* ‘with running water,’ Yt. 13. 43 bis, *taṭ-āpō*, Yt. 13. 44 bis (so all manuscripts) beside *tačat-āpa*, Ys. 16. 8, 68. 8 (cf. *tači aipya* loc. sg. Vd. 6. 26), Jackson, *Avest. Gramm.*, 31. Sanskrit *c(h)* rarely becomes Pāli *s*. Skt. *samuccita* ‘accumulated,’ Pāli *samussita*. This change has a close parallel in the Iranian. Skt. *chāyā* ‘shadow,’ Av. *asaya* ‘shadowless,’ New Pers. *sāyah* ‘shadow.’

Dentals.—The frequent change of Sanskrit dentals into Pāli cerebrals, and the rarer instances of the reverse change are not relevant here. The change of Sanskrit *d(h)* to Pāli *ḷ*, e. g., Skt. *ādīpana* ‘light,’ Pāli *ālimpana*, Skt. *gṛhagodhikā* ‘lizard,’ Pāli *gharagolikā*, finds only an apparent analogy in a few Persian loan-words (Horn, 57). The Afγān, on the other hand, shows true examples of a change of *d, ḍ* to *ḷ*, Geiger, *Grundriss der iran. Philol.*, i. b. 209, cf. also 301. Sanskrit *d* frequently apparently becomes Pāli *y*. Skt. *khādita* ‘eaten,’ Pāli *khāyita* (Müller, *Simplified Grammar of the Pali Language*, 30, compares the *ya-gruti* of the Jainaprākṛit, e. g., Skt. *ekasāṣṭi* ‘sixty-one,’ Jainaprāk. *egasatṭhi*, which becomes *egayatṭhi*, *egavatṭhi*, *egahatṭhi*, and finally *egatṭhi*; cf. his *Beiträge zur Gramm. des Jainaprākṛit*, 3–4). We must, however, regard the *y* in such cases as introduced to avoid the hiatus caused by the loss of the intervocalic *d*, Frankfurter, 10; cf. the Hindī examples in Hoernle, *Gramm. of the Gaudian Lang.*, 16–18, 33. This same phenomenon meets us frequently in New Persian. Skt. *khādati* ‘he eats,’ New Pers. *xāyad*; New Pers. *balāyah* ‘worthless’ beside *balādah*; Pahl. *pātēz* ‘harvest,’ New Pers. *pāyēz* (older form *pāyēz*). A change of Sanskrit *n* to Pāli *r* is correctly postulated by Kuhn, 38. Skt. *Nāirañjana* nom. prop., Pāli *Nerañjara*

(cf. further Greek *Mévanðpos*, Pāli *Milinda*, Trenckner, *Pāli Miscellany*, 55; Skt. *enas* 'fault,' Pāli *ela*). With this we may compare the Avestan and Pahlavi forms in *n* beside those in *r*, e. g., Av. *karšvar* 'clime, zone' beside *karšvan*, *zafar* 'jaw' beside *zafan*, Pahl. *Mitnō* nom. prop. beside *Mitrō*, *kant* 'done' beside *kart* (Jackson, 96-97; C. de Harlez, *Manuel du Pehlvi*, 14. Note also the Indo-Germanic doublets in *-n* and *-r*, e. g., **ahan* 'day' beside **ahar*, etc. Brugmann, *Vergleich. Gramm.*, ii. 353; Noreen, *Urgerm. Lautlehre*, 194-196; Pedersen, *KZ.* xxxii. 240-271).

Labials.—Sanskrit *bh* becomes Pāli *m*. Skt. *duṇḍubhi* 'drum,' Pāli *dīṇḍima*. With this we may compare New Pers. *m* arising from *b*. Skt. *bhaṅga* 'bang, hemp,' Av. *banha*, Pahl. *mang* beside *bang*, New Pers. *mang*. The change of Sanskrit *m* to *v*, e. g., Skt. *nīmāms* 'investigating,' Pāli *vivāms*, finds a reverse process in the New Persian change of *v* to *m*, e. g. New Pers. *arṣumān* 'purple' beside *arṣuvān* (a loan-word from the Semitic, cf. Syr. *arḡvānā* 'purple' [from the Babylonian] according to Pizzi, *Antologia Firdusiana*, 303),¹ or New Pers. *parmānah* 'butterfly' beside *parvānah*.

Semivowels.—The change of *y* to *j*, common to the Prākṛit and the modern vernaculars of India as well as to Pāli, is found in New Persian also. Skt. *yantragṛha* 'bath-room,' Pāli *jaṇṭāghara*, *jaṇtaggha*; Av. *yāma* 'glass,' New Pers. *ḡām*. Sanskrit *v* sometimes becomes Pāli *y*. Skt. *dāva* 'forest,' Pāli *dāya*. With this we may compare the Avestan change of intervocalic *v* to *y* (especially between *u* and *e*). Skt. *dvē* 'two,' Av. *duyē*, and more especially Old Pers. *gaubataiy* 'he says,' New Pers. *ḡuyad* (cf. Horn, 47, *KZ.* xxxv. 179. Older form *gōyad*).

Sanskrit *v* frequently becomes Pāli *b*. Skt. *suvr̥ṣṭi* 'abundance of rain,' Pāli *subbut̥ṭhi*. In New Persian we find a regular change of *v* to *b* before *ā*, *ē*, *ī*, *iy*. Av. *vāra* 'rain,' New Pers. *bārān*; Av. *varata* 'captured,' New Pers. *bardah*; Av. *vaēti* 'willow,' New Pers. *bīd* (older form *bēd*, cf. Pahl. *vēt*); Av. *visaiti* 'twenty,' New Pers. *bīst* (older form also *bīst*); Av. *vī-āpō-tama* (Vd. 3. 15, var. lect. *vyāpa*) 'most without water,' Pahl. *vīyāpān*, New Pers. *bīyābān*. Kuhn, 45, notes a possible change of *v* to

¹ [This word is found in the Semitic languages also with both *m* and *w*: Assy. *argamanna*, Heb. *argmān*; Aram., Syr. *arḡwān*, *argwānā*. It is probably not of Semitic origin.—ED.]

bh in Skt. *pratisamvid* (northern Buddhists) 'discrimination,' Pāli *paṭisambhidā*. Childers, however, connects the Pāli word with the root *bhid* 'to split.' If Kuhn's explanation should be correct, one might compare cases of a change of *b* into *v* as a reverse phenomenon in Avestan and New Persian. YAv. *mā-vōya* 'to me,' GAv. *maibyā*; Old Pers. *nipištanaīy* 'to write,' New Pers. *nivištan* beside *nibištan*.

The interchange of *r* and *l* is common to both dialects.

r becomes *l*. Skt. *parigha* 'iron beam,' Pāli *paligha*; Av. *Hara Bərəzaiti* nom. prop., New Pers. *Alburz*.

l becomes *r*. Skt. *ālambana* 'support,' Pāli *ārammana*; Skt. *phāla* 'plow,' New Pers. *supār*.

Sibilants.—Sanskrit *ç* is occasionally represented by *ch* in Pāli. Skt. *çava* 'corpse,' Pāli *chava*. Similarly we find in dialectic New Persian *š* for *ç*, e. g. New Pers. *čūm* 'night' beside *šām* (Av. *xšāfnyā*). The reverse change of *ch* to *s* is found in the Iranian, e. g., Skt. *chāyā* 'shadow,' Av. *asaya* 'shadowless,' New Pers. *sāyah* 'shadow.'

The rare change in Pāli of a Sanskrit *h* to *s*, e. g., Skt. *snāihika* 'oily,' Pāli *snesika*, is the reverse of the phenomenon which we find in Avestan, e. g., Skt. *sapta* 'seven,' Av. *hapta*. In Pāli, as in Prakrit, the combination sibilant + nasal may become nasal + *h*. Skt. *praçna* 'question,' Pāli *pañha*.

Interchange of Aspirates and Non-Aspirates.—The Pāli frequently aspirates the tenues and mediae. Skt. *çakti* 'ability,' Pāli *satthi*; Skt. *sukumāra* 'youthful,' Pāli *sukhumāla*; Skt. *pāribhadra* 'a sort of tree,' Pāli *phālibhadda*; Skt. *pratya-gra* 'new,' Pāli *paccaggha*. These changes are in the main sporadic. They do not, therefore, offer a true parallel with the specifically Iranian law of spirantization. We may, however, compare the occasional instances in New Persian of the development of *f* from *p*. New Pers. *gūsband* 'sheep' beside *gūspand* (Av. *gaospanta*), older forms *gōsfand* and *gōspand*; dialectic New Pers. *farāstū(k)* 'swallow' beside *parrastū(k)*.

The opposite process is the change of the aspirate tenues or mediae into tenues or mediae. Skt. *ksudhā* 'hunger,' Pāli *khudā*; Skt. *khā* 'spring,' Pāli *kā*; Skt. *mṛṣṭa* 'polished,' Pāli *maṭṭa* beside *maṭṭha*. Similar sporadic cases of the loss of aspiration are found in the Iranian. Av. *varədaša* 'growth' beside *varədaya* 'make thou grow' (Skt. *vardhya*); New Pers. (dialectic) *pahmīn* 'to understand' beside *fahmīdan*; *kaptīn* 'to fall'

beside *kaftmūn*; cf. also Av. *gaēša* 'world,' New Pers. *gūtī* (older form *gēti*, cf. Pahl. *gētīk*).

A Sanskrit aspirate may become a simple *h* in Pāli. Skt. *laghu* 'light,' Pāli *lahu*; Skt. *rudhira* 'blood,' Pāli *ruhira*; Skt. *bhavati* 'he becomes,' Pāli *hoti*. The same phenomenon appears at times in the New Persian. Av. *gaēsanām* 'of creatures,' New Pers. *gihān* 'world,' (older form, as in Pahl., *gēhān*); Av. *spāda* 'army,' New Pers. *sipāh*; Av. *taxma* 'sturdy,' New Pers. *tah(a)m*; Old Pers. *kaufa* 'hill,' New Pers. *kūh* (older form *kōh*); Old Pers. *τὸ Βαγίστανον ὄρος* nom. prop., New Pers. *Bahistūn* and *Bahistān* (cf. Spiegel, *Erdnische Alterthumskunde*, iii. 813 Anm.).

Interchange of Sonants and Surds.—The substitution of sonants for surds is quite common both in Pāli and in New Persian. Skt. *uta* 'or,' Pāli *uda*; Skt. *vyathayati* 'he trembles,' Pāli *vedhati*; Skt. *parasvant* 'rhinoceros,' Pāli *balasata*; Skt. *sruc* 'ladle,' Pāli *sujā*; Skt. *Çākala* nom. prop., Pāli *Sāgala*; Skt. *nighaṇṭu* 'lexicon,' Pāli *nighaṇḍu*. Since the change of surds into sonants is a regular law in New Persian when the sounds in question stand between vowels or after the sonant consonants *r*, *l*, *n*, we cannot compare the Pāli with the New Persian here. Yet at least one change, that of New Persian *x* to *γ*, seems to belong here. New Pers. *šay* 'horn' beside *šāx* (Skt. *çākhā*). Here also is to be referred the New Persian *δ*, *d* for Avestan *ṣ* in the New Persian loan-word *Zardušt*, *Zarādušt* nom. prop., Av. *Zaraduštra*; and such Avestan forms as *fradaṣām* 'I brought forth,' Yt. 10. 1. beside *fradaḍām*, Frag. 4. 1, (Jackson, *Avest. Gramm.*, 59). In both Pāli and New Persian we often find *v* substituted for the *b* arising from an original *p*. Skt. *kapi* 'monkey,' Pāli *kavi* beside *kapi*; Old Pers. *napāt* 'grandson,' New Pers. *navādah*.

The substitution of a surd for a sonant is quite common in Pāli but exceedingly rare in Iranian. Skt. *pratyāga* 'sacrifice,' Pāli *pāyāka*; Skt. *glasnu* 'lazy,' Pāli *kilāsu*; Skt. *balvaja* 'reed,' Pāli *pabbaja*. As Iranian parallels we may cite from the Avestan *čaraṣwe* 'ye go,' Skt. *caradhve*; GAv. *vaēša* 'he knows' beside GAv. *vāēdā* (Skt. *veda*) (Jackson, *Avest. Gramm.*, 34, but against this view see Bartholomae, 163).

Samprasāraṇa.—In Pāli *ya* often becomes *ī*. Skt. *satyaka* 'true,' Pāli *saccika*; Skt. *vyatihāra* 'long step,' Pāli *vītihāra*. With this phenomenon we may perhaps compare the Avestan

reduction of *ya* before a nasal to *ī*. Skt. *hiraṇyam* (acc.) 'golden,' Av. *zaranim*; Av. *iriṣinti* 'they perish' for **iriṣ-yanti*.

Similarly in Pāli *va* often suffers a reduction to *u*. Skt. *latvakā* 'quail,' Pāli *laṭukikā*. Here again we may compare Avestan *ū* from *va* before nasals. Av. *Sriṣum* (acc.) 'third' from the stem *Sriṣva*;- Skt. *āśrodhvam* 'ye were heard of,' GAv. *asrūždūm*. Cf. also, as regards the New Persian, Skt. *pravatā* 'downwards,' New Pers. *furūd* (older form *furōd*, cf. Pahl. *frōt*, and see Horn, *KZ.* xxxv. 183-184).

Contraction arising from the loss of semi-vowels.—The Pāli contracts *aya* and *ayi* to *e* in the most of its causatives and also in some simple verbs, such as Skt. *nayati* 'he leads,' Pāli *neti*. Similarly *āya* becomes *e* in Skt. *palāyati* 'he flees,' Pāli *paleti*; but both *āya* and *aya* frequently become *ā*, as in Skt. (properly Middle Indian) *upaṭṭhāyaka* 'servant,' Pāli *upaṭṭhāka*. With this change of *aya* to *e* in Pāli we may compare the Avestan reduction of *aya* to *āē* before nasals, e. g., Skt. *ayam* 'this,' Av. *aēm*. In New Persian we find *ē* resulting from a contraction of *aya*, and *ā* being developed from *āya*, *ayā*. Examples of these changes are as follows: Old Pers. **dārayata* 'ye hold' (cf. 1. sg. *dārayāmiy*), New Pers. *dārīd* (older form *darēd*); Old Pers. *āšāyašiya* 'king,' New Pers. *šāh*; Old Pers. *Dārayavauš* nom. prop., New Pers. *Dārā*, *Dārāb*, *Dārāv*.

The Pāli contraction of *iya* to *i* in Pāli *kittaka* 'how much' for **kīyattaka* (Skt. *kīyant*) may be paralleled in the Iranian by Skt. *priya* 'beloved,' Av. *frya*, New Pers. *frī* (older form also *frī*).

From *ava* the Pāli often develops *o*. Skt. *avara*, *avāra* 'lower, hither,' Pāli *ora* (Professor Jackson suggests to me a comparison also with Av. *aora*); Skt. *prabhavanaka* 'sufficient,' Pāli *pahonaka*. Sometimes the contraction of *ava* results in *u* instead of *o*. Skt. *avajñā* 'contempt,' Pāli *uññā*. Similar contractions are found in the New Persian. Skt. *avasthita* 'firm,' New Pers. *ūstām* (older form *ōstām*) beside *ustām*; Skt. *tavas* 'strength,' New Pers. *tūš* (older form *tōš*) beside *taviš* (cf. Horn, *KZ.* xxxv. 187).

Contraction arising from the loss of consonants.—A loss of consonants with a resulting vowel contraction is not unknown in Pāli. In Prākṛit, where the loss of consonants is still more common, a resulting hiatus is seldom avoided by con-

traction. Pāli examples of the phenomenon in question are as follows: Skt. *udaka* 'water,' Pāli *oka*; Skt. *Kuṣinagara* nom. prop., Pāli *Kusināra*; Skt. *paccūṣasamaya* 'dawn,' Pāli *paccūsamaya* (properly a case of haplology); Skt. *ṣaḍaṅgula* 'six inches,' Pāli *chaṅgula*; Skt. *durosārita* 'duly and unduly restored,' Pāli *dosārita*; Skt. *ṣuka* 'parrot,' Pāli *suva* (*v* to avoid hiatus) beside *suka*. Similar to the case of Pāli *suva* 'parrot' is Skt. *Kauṣika* 'owl, name of Indra,' Pāli *kosiya*. Cases of the loss of consonants with contraction are less common in New Persian than in Pāli, yet a few examples may be quoted. Pahl. **pātḱōspān* from *pātḱōs* 'province,' Armen. loan-word *patgosapan*, New Pers. *padūspān* (older form *padōspān*); Balūči *nayan* 'bread,' New Pers. *nān* (Hübschmann, 101; Horn, *Grundriss der iran. Philol.*, i. b. 70).

Metathesis.—Metathesis occurs but rarely in Pāli or in New Persian. As Pāli examples we may quote the following words: Skt. *upānah* 'shoe,' Pāli *upāhanā*; Skt. *prāvaraṇa* 'upper garment,' Pāli *pārupana* beside *pāpurana*; Skt. *sakaṭa* 'stupid,' Pāli *kaṣaṭa*; Skt. *cilamīlikā* 'necklace,' Pāli *cīlīmika* beside *cimīlikā*; Skt. *gardabha* 'donkey,' Pāli *gadrabha*. A case of vowel metathesis is cited by Kuhn, 57, in Skt. *picumanda* 'the nimba-tree,' Pāli *pucimanda*. Metathesis is found occasionally in New Persian. New Pers. *hargiz* 'ever' beside *hagirz*; Av. *karana* 'boundary,' New Pers. *karān(ah)* beside *kanār(ah)*; Skt. *bhīṣaj* 'physician,' New Pers. *bizišk*, *biṣišk*, as compared with the Armenian loan-word *bžišk*.

The group *ariya* becomes by metathesis *ayira* in Pāli. This combination is then contracted to *era*. Skt. *ācārya* 'wonderful,' Pāli *acchera* beside *acchariya*. The group *ayira* may also give *ira*. Skt. *asamharya* 'unconquerable,' Pāli *asamhīra*. (Cf. Wackernagel, *Altind. Gramm.*, i. 207, on a similar metathesis in the case of *yuv* for *vy* in the texts of the White Yajurveda.) A possible analogy in the New Persian to this metathesis of *y* is the change of *any* to *in* through the transition grade *ain*. Av. *mainyava* 'heavenly,' New Pers. *mīnū* (cf. Hübschmann, *KZ.* xxxvi. 158–159, older form *mēnō*); and a precise parallel to the Pāli rule is furnished by such New Persian words as *irmān* 'guest,' Av. *airyaman* (older form **ērman*, see Horn, *Grundriss der neupers. Etymologie*, 32, Anm. 2, and cf. Pahlavi *ērmān*, *ērmānik*, *ērmānih*).

C. Compound Consonants.

Assimilation, which forms one of the main distinctions of the Pāli-Prākṛit from the Sanskrit, is not a phenomenon of great frequency in the Iranian dialects. Certain similarities, however, between the Pāli and the New Persian in this regard exist. Of these cases of like assimilation of groups of consonants in the two languages the following examples may be given:

rk becomes *kk*. Skt. *karkāṭaka* 'crab,' Pāli *kakkāṭaka*; Skt. *ṣarkarā* 'sugar,' Pāli *sakkharā* or *sakkarā*, New Pers. *šak(k)ar* (loan-word from the Indian).

dg becomes Pāli *gg*, New Pers. *γ*. Skt. *pudgala* 'individual,' Pāli *puggala* (cf. also *dgh* becoming *ggh*, e. g., Skt. *udghoṣa* 'proclamation,' Pāli *ugghosa*); Skt. *madgu* 'cormorant,' New Pers. *māy*.

jy becomes *j(j)*. Skt. *rājya* 'kingdom,' Pāli *rajjā* (cf. *jy* becoming also *jjh*, e. g., Skt. *adhijya* 'with taut bow,' Pāli *adejjha*, but Skt. *jyā* 'bow-string,' Pāli *jyā* and *jiyā*); New Pers. *jāvīdan* 'to gnaw,' O. H. Germ. *kiuwan*, O. Bulg. *žvati* (Hübschmann, *Pers. Stud.*, 49-50, 152, 229; Horn, *Grundriss der iran. Philol.*, i. b. 47).

dhy becomes *jjh*, New Pers. *ǰ*. Skt. *madhya* 'middle,' Pāli *majjha*; Skt. *dhyāna* 'meditation,' New Pers. *jān* 'soul.'

kt (New Pers. *xt*) becomes *tt*, New Pers. *t*. Skt. *ṣakti* 'power,' Pāli *satt(h)i*; Pahl. *pōxtanō* 'to cook,' New Pers. *puxtan* but dialectic *patēn*, *potēn* (Horn, 67).

st becomes *tth*, New Pers. *t*. Skt. *urastāda* 'beating the breast,' Pāli *urattthāli*; Lat. *sturnus* 'starling,' New Pers. *tar* (in New Pers. this assimilation is found only initially and the examples are doubtful, Horn, 86-87).

dv becomes *dd*, New Pers. *d*. Skt. *ṣādvala* 'grassy,' Pāli *saddala*; Skt. *dvīpa* 'island,' Pāli *ḍīpa* (cf. also *dhv* becoming *ddh*, e. g., Skt. *adhvan* 'road,' Pāli *addhā*); Av. *dvar* 'door,' Old Pers. *duvarā*, New Pers. *dar*.

pn becomes *pp*, cf. New Pers. *f* from *fn*. Skt. *svapna* 'sleep,' Pāli *soppa* beside *supīna*; Av. *tafnu* 'heat' (cf. Skt. *tapas*), New Pers. *taf*.

dv becomes *bb*, New Pers. *b* (cf. above on *dv* becoming also *dd*). Skt. *dvādaśan* 'twelve,' Pāli *bārasa*; Av. *dvar* 'door,' New Pers. (dialectic) *bar* beside *dar*.

nm becomes *mm*, New Pers. *m*. Skt. *unmārga* 'underground water-course,' Pāli *ummagga*; Av. *saēna mərəya* 'eagle-bird,' Pahl. *sēnmurv*, New Pers. *šimury* 'griffin' (older form *sēmury*).

rdr becomes *ll* (cf. New Pers. *l* from *rd*). Skt. *ārdra* 'wet,' Pāli *alla* beside *adda*; Av. *sarəda* 'year,' New Pers. *sāl*.

st becomes *ss*, New Pers. *s*. Skt. *basta* 'goat,' Pāli *vassa* beside *bhastā*; New Pers. (poetic) *Šārisān* nom. prop. beside *Šāristān*.

rs (Skt. *rṣ*, Av. *rš*) becomes *ss*, New Pers. *š*. Skt. *varṣa* 'year,' Pāli *vassa*; Av. *barəša* 'mane,' New Pers. *buš* (Old Pers. **brša*, Hübschmann, *KZ.* xxxvi. 167).

A comparison of the modern Indian and Iranian dialects is not unprecedented. I need only allude to Trumpp's *Grammar of the Paštō . . . compared with the Irānian and North-Indian Idioms*. Trumpp was in error, as we know now, in supposing that the Afyān was a language "forming the first transition from the Indo-Ārian to the Irānian family, and therefore participating of the characteristics of both, but still with predominant Prākṛit features" (*Grammar*, xii. See on this passage of Trumpp's, Geiger, *Grundriss der iran. Philol.*, i. b. 205). But the real value of Trumpp's service cannot be impaired by this partial error, which was so natural at the time when he wrote. And once again, scarcely a year ago, that admirable scholar to whom we owe so much for his unexcelled *Grundriss der neupersischen Etymologie* and his *Neupersische Schriftsprache*—to mention only his works which immediately concern us now—has broached the problems here discussed. All too brief is Horn's note (*Grundriss der iran. Philol.*, i. b. 35, cf. 15–16, and Geiger, *ibid.* 208) claiming the scientific right to institute a comparison of phenomena presented in common by New Persian and by Prākṛit (of which Pāli is of course a form). This right is, I think, a valid one, and the subject merits a careful investigation, which should include within its scope the entire Indo-Iranian family of languages. Such a study, which it is my hope and intention to make, might be of service in the study of dialectic developments in general, and although confined to the Indo-Iranian dialects, it might by its implications be not altogether without bearing on the interests of the great body of the Indo-Germanic phonology.